

**AMENDMENTS TO THE CLAIMS**

1. (Currently amended) An imaging system A radiation detector comprising:  
a radiation source directing radiation along a propagation axis;  
a detector assembly positioned to receive the radiation, the detector assembly including a plurality of sheets oriented to extend substantially along the propagation axis and spaced transversely across the axis to define a plurality of axially extending detector volumes, ~~the sheets receive radiation longitudinally and generate high-energetic electrons exiting the material into the detector volumes~~; and  
detection means detecting negatively and positively charged high-energetic particles liberated into the detector volumes to provide for substantially independent signals, wherein the detection means includes amorphous selenium.
2. (Cancel)
3. (Currently amended) An imaging system A megavoltage radiation detector comprising:  
a radiation source directing megavoltage radiation along a propagation axis;  
a detector assembly positioned to receive the radiation, the detector assembly including a plurality of sheets oriented to extend substantially along the propagation axis and spaced transversely across the axis to define a plurality of axially extending detector volumes, ~~the sheets receive receiving the megavoltage radiation longitudinally and generate high-energetic electrons exiting the material into the detector volumes~~; and  
detection means detecting negatively and positively charged high-energetic particles liberated into the detector volumes to provide for substantially independent signals, wherein the detection means includes amorphous selenium.
4. (Withdrawn) A method of fabricating a megavoltage radiation detector, the method comprising the steps of:  
depositing a plurality of readout electrodes on at least one surface of a substrate;  
depositing an amorphous selenium layer on at least one surface of the readout electrodes; and  
depositing a high voltage electrode layer on at least one surface of the amorphous selenium layer.

5. (New) The imaging system of claim 1 wherein the detector assembly includes a housing that supports a high voltage bus bar operable to connect to a high voltage source and wherein each sheet is connectable to the high voltage bus bar.
6. (New) The imaging system of claim 5 wherein a surface of the detection means is in contact with the sheet and receives an electrical charge.
7. (New) The imaging system of claim 6 wherein the detection means absorbs the radiation to generate the negatively charged high-energetic particles and wherein the negatively charged high-energetic particles move to the surface of the detection means to neutralize a part of the electrical charge.
8. (New) The imaging system of claim 1 wherein the detector assembly includes a dielectric element having alignment means for positioning the sheets within the detector assembly.
9. (New) The imaging system of claim 8 wherein the radiation diverges from the radiation source and wherein the dielectric element is curved to orient the plurality of sheets corresponding to the divergence of the radiation.
10. (New) The imaging system of claim 1 wherein the radiation source directs megavoltage radiation along the propagation axis.
11. (New) The imaging system of claim 1 wherein the detection means includes a plurality of layers.
12. (New) The imaging system of claim 11 wherein the plurality of layers includes a first layer comprised of the amorphous selenium, a readout electrode layer, and a substrate layer.
13. (New) The imaging system of claim 12 wherein the substrate layer comprises an insulation material.
14. (New) The imaging system of claim 13 wherein the insulation material comprises glass.

15. (New) The imaging system of claim 3 wherein the detector assembly includes a housing that supports a high voltage bus bar operable to connect to a high voltage source and wherein each sheet is connectable to the high voltage bus bar.
16. (New) The imaging system of claim 15 wherein a surface of the detection means is in contact with the sheet and receives an electrical charge.
17. (New) The imaging system of claim 16 wherein the detection means absorbs the megavoltage radiation to generate the negatively charged high-energetic particles and wherein the negatively charged high-energetic particles move to the surface of the detection means to neutralize a part of the electrical charge.
18. (New) The imaging system of claim 3 wherein the detection means includes a plurality of layers.
19. (New) The imaging system of claim 18 wherein the plurality of layers includes a first layer comprised of the amorphous selenium, a readout electrode layer, and a substrate layer.
20. (New) The imaging system of claim 10 wherein the substrate layer comprises an insulation material.
21. (New) The imaging system of claim 20 wherein the insulation material comprises glass.